Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 2002

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SUMMARY OF FINDINGS

During 2002, the total value of shipments of switchgear and switchboard apparatus was $6.5 billion, down 10.3 percent from the revised 2001 value of $7.2 billion. The 2002 shipments include power circuit breakers, valued at $605.3 million, a decrease of 2.9 percent from 2001; low voltage panelboards, valued at $2.2 billion, a decrease of 12.6 percent from 2001; fuses and fuse equipment, valued at $363.7 million, a decrease of 6.3 percent from the revised 2001 value of $388.2 million; molded case circuit breakers, valued at $1.2 billion, a decrease of 3.0 percent from 2001; duct, valued at $218.4 million, a decrease of 13.9 percent from the revised 2001 value of $253.6, and switchgear valued at $1.9 billion, a decrease of 14.5 percent from 2001. During 2002, the total value of shipments of relays and industrial controls was $7.5 billion, a 6.2-percent decrease from 2001. The 2002 shipments include general-purpose relays valued at $557.6 million, a decrease of 11.3 percent from 2001; specific-purpose industrial controls, valued at $2.8 billion, down 7.4 percent from 2001; general-purpose industrial controls valued at $3.6 billion, a decrease of 3.2 percent from 2001; and motor controller accessories valued at $440.5 million, a decrease of 14.6 percent from 2001.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Tempie Whittington, 301-763-4800.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-763-4673.

U S C E N S U S B U R E A U

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Table 1. Value of Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 to 2002
[Millions of dollars]

Product code	Product description	2002	2001	2000	1999	1998
3353131100	Power circuit breakers	605.3	623.6	630.4	544.8	481.0
3353133100	Low-voltage panelboards	2168.4	2482.1	2834.2	2465.8	2,201.0
3353135100	Fuses and fuse equipment	363.7	388.2	601.8	608.2	577.2
3353137100	Molded case circuit breakers	1247.8	1286.1	1553.4	1440.8	1369.8
3353139100	Duct, 1,000 volts and under	218.4	253.6	308.8	282.4	278.1
335313A100	Switchgear (except ducts)	1875.4	2192.8	2103.9	1933.5	1885.6
3353141100	Relays, general-purpose	577.6	651.0	795.6	777.3	783.2
3353143100	Specific-purpose industrial controls	2805.0	3030.1	3198.5	3664.2	3785.4
3353145100	General-purpose industrial controls	3642.4	3762.8	4598.9	4382.4	4587.2
3353147100 3353147000	Motor controller accessories and parts for industrial controls	440.5	515.6	565.7	556.3	496.0

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 2002 and 2001
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002 Quantity	2002 Value	2001 Quantity	2001 Value
335313	Switchgear and switchboard apparatus	(NA)	(X)	6,478,904	(X)	7,226,435
3353131	Power circuit breakers, all voltages	32	(X) b/	605,323	(X)	623,647
3353131101	Power circuit breakers (sold separately) for use in metal-clad switchgear, oil and oilless, over 1,000 volts (number of breakers)	10	9,486	49,984	a/ 10,373	53,220
3353131103	All other power circuit breakers (sold separately)	26	(S) b/	532,074	(S)	536,231
3353131129	Parts for all power circuit breakers	16	(X) a/	23,265	(X) a/	34,196
3353133	Low voltage panelboards, distribution boards, and other switching and interrupting devices, 1,000 volts and below	111	(X) a/	2,168,351	(X) a/	2,482,085
	Panelboards, including enclosing cabinets:					
3353133201	Fusible, including combination switch fuse	42	(S)	108,867	(S)	151,556
3353133104	Circuit breaker	54	(S)	660,522	a/ 1,171,022 r/	719,243
	Distribution switchboards:					
3353133207	Fusible	29	25,370	123,789	b/ 27,936 a/	185,185
3353133211	Circuit breaker	40	101,465 a/	347,329	b/ 123,752 a/	458,951
3353133213	Other, including theater switchboards	6	(D)	(D)	(D)	(D)
	Switches (except switches commonly known as snap, toggle, and rotary switches and switch devices intended primarily to be used with electric motor controls):					
	Knife switches, enclosed:					
3353133216	Heavy duty	9	a/ 1,256,254	151,986	a/ 1,381,260	157,134
3353133219	General duty	4	886,662	48,808	891,144 a/	43,889
3353133222	Enclosed fusible, service entrance, and branch circuit cutouts	7	(D)	(D)	(D)	(D)
3353133225	Circuit breaker type	12	(S)	282,072	7,586,240 a/	287,376
	Load centers:					
3353133228	Grouped metering panels (combinations of two or more meters and related switching units with over-current protection associated with each meter, including accessory components, excluding single socket load combinations)	15	(S)	44,997	(S)	45,523
3353133231	Other switches, excluding snap, bolted, toggle, push, etc., including open knife switches, motor contact, motor disconnect, meter service equipment other than meter-mounting, and test devices	18	(X) a/	118,577	(X) a/	152,735
3353133234	Other low voltage switchgear apparatus	23	(X) b/	272,595	(X) a/ r/	271,933
3353135	Fuses and fuse equipment, under 2,300 volts (except power distribution cutouts)	16	(X)	363,672	(X) c/ r/	388,220
3353135101	Nonrenewable plug fuses 1/	3	(X)	(D)	(X)	(D)
3353135104	Nonrenewable cartridge fuses	8	(X) b/	152,861	(X) c/ r/	152,144
3353135107	Renewable plug and cartridge fuses, including renewable links 1/	3	(X) b/	5,644	(X) c/ r/	2,577
3353135111	Other fuses and open fuse material, including cutouts, clips, bases, etc.	14	(X) a/	205,167	(X) c/ r/	233,499
3353137	Molded case circuit breakers, 1,000 volts and under	37	(X)	1,247,807	(X)	1,286,112
	Industrial type, assembled as complete units in supporting and enclosing housing of insulating materials, with or without accessories or attachments:					
3353137101	With ground fault detection capability 2/	14	(D)	(D)	(D)	(D)
3353137104	Without ground fault detection capability 2/	19	34,056,362	560,708	r/ 35,708,245	617,488

Continued

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 2002 and 2001
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002 Quantity	2002 Value	2001 Quantity	2001 Value
	Residential or light duty type, (primarily) for load center application, assembled as complete units in supporting and enclosing housing of insulating materials:					
3353137107	With ground fault detection capability.....	6	(D)	(D)	(D)	(D)
3353137111	Without ground fault detection capability.....	5	(D)	(D)	(D)	(D)
3353137113	Individually enclosed industrial type, excluding panelboards and busway plugs.....	10	(D)	(D)	(D)	(D)
	Other molded case circuit breakers:					
3353137117	Marine, Navy, aircraft and aerospace type	9	(S) b/	98,196	(S) b/	118,589
3353137131	All other types, including automotive and electronic.....	15	(S) a/	247,874	(S) a/	246,733
3353139	Duct, including plug-in units and accessories, 1,000 volts and under, consisting of enclosed sectionalized prefabricated bus bars rated 20 amperes or more and associated structures and fittings.....	18	(X) b/	218,390	(X) b/ r/	253,577
335313A	Switchgear (except ducts).....	113	(X) a/	1,875,361	(X) a/	2,192,794
335313A101	Automatic and manual control panels (generators,transformers, feed-controls, etc.)..	55	(X) a/	197,049	(X) a/ r/	262,206
335313A204	Metal-clad switchgear (using power circuit breakers, oil and oilless), all voltages above 1,000 volts, up to and including 38 kV, excluding load interrupter switchgear.....	36	(X) a/	347,141	(X) a/ r/	429,570
335313A307	Metal-enclosed load interrupter switchgear assemblies, all voltages, incluidng parts.....	30	(X) a/	194,593	(X) a/	242,394
335313A311	Metal-enclosed low-voltage power circuit breaker switchgear assemblies 1,000 volts and below, including parts and excluding load interrupter switchgear.....	29	(X)	209,941	(X) a/ r/	285,420
335313A313	Metal-enclosed bus bars when sold separately, above 1,000 volts, including isolated, segregated, nonsegregated and cable bus bars.....	12	(X)	73,454	(X) a/	66,136
	Power switching equipment, 2,300 volts and over, including attachments, auxiliaries, bus supports and fittings, and accessories, but excluding power fuses, sold separately. Also includes single-phase circuit reclosers:					
335313A316	Outdoor, excluding structures.....	24	(X) a/	385,732	(X) a/	403,758
335313A319	Indoor.....	9	(X)	15,186	(X)	11,914
335313A322	Power fuses and fuse links for 2,300 volts and over, ac service, excluding distribution cutouts.....	9	(X)	(D)	(X)	(D)
335313A325	Power and ground connectors generally used in substation construction.....	4	(X)	(D)	(X)	(D)
335313A328	Overhead transmission and distribution connectors (clamps, taps, terminals, and splices) 3/.....	3	(X)	(D)	(X)	(D)
335313A331	Transmission and distribution connectors, n.e.c., including underground deadends, hot line taps, stirrups, and repair sleeves, etc. 3/..	5	(X)	(D)	(X)	(D)
335313A334	Distribution cutouts.....	5	(X)	(D)	(X)	54,222
335313A337	Other switchgear devices, including regulators and miscellaneous switchboard devices (for sale separately) 3/.....	19	(X)	206,734	(X) a/	237,643
335314	Relays and industrial controls.....	(NA)	(X)	7,465,527	(X)	7,959,579
3353141	General-purpose and other relays.....	100	(X) b/	577,576	(X) a/	651,048
3353141101	Industrial-control relays (all voltages), n.e.c.	40	(S) b/	182,262	(S) a/	222,961
	General-purpose electromechanical relays: Over 100 MW actuating power and sealed (either hermetically or environmentally):					
3353141104	0 through 2.0 amperes contact rating 4/..	7	(D)	(D)	(D)	(D)

Continued

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 2002 and 2001
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002 Quantity	2002 Value	2001 Quantity	2001 Value
3353141107	Over 2.0 through 10.0 amperes contact rating 4/	16	(D)	(D)	(D)	(D)
3353141111	Over 10.0 amperes contact rating 4/	7	(S) b/	37,477	(S) r/	35,127
	Over 100 MW actuating power and not sealed:					
3353141113	0 through 10.0 amperes contact rating	15	c/ 1,878,632 a/	10,443	1,779,307	14,240
3353141116	Over 10.0 amperes contact rating 5/	12	(S)	23,438	(S)	26,676
3353141119	0 through 100 MW actuating power (both sealed and not sealed) 5/	1	(D)	(D)	(D)	(D)
	Miniature printed circuit mounted electro-mechanical relays, exluding reed relays (profile height 1/2-inch max.):					
	Sealed (either hermetically or environmentally): 6/	7	(D)	(D)	(D)	(D)
3353141141	General-purpose solid-state relays, pure solid-state and hybrid solid-state, excluding time delay	8	(D)	(D)	(D)	(D)
	High performance military/aerospace/aircraft relays and contactors (generally pertaining to Mil-R5757, 6106, 19523, 25108, and 39016):					
3353141143	Round and square can multipole airframe relays and contractors (both sealed and not sealed) (all sizes)	3	(S) a/	43,482	(S) c/	45,021
	Crystal can types (sealed) 7/	4	(S) a/	31,950	(S) b/	47,582
3353141155	RF, antenna and coaxial relays (sealed and not sealed), excluding reed relays	2	(D)	(D)	(D)	(D)
	Reed relays 8/	11	(S)	16,153	(S)	21,623
3353141167	Stepping switches, stepping and impulse relays	3	(D)	(D)	(D)	(D)
3353141171	Switchgear and protective relays	6	(D)	(D)	(D)	(D)
	Timing relays (timers):					
3353141173	Solid-state/EMR combination	19	a/ 2,669,741 b/	49,055	a/ 2,977,929 c/	37,606
3353141176	Solid-state-pure	15	a/ 198,087 b/	6,082	a/ 278,735 c/ r/	8,228
3353141179	All other timing relays (timers), including pneumatic, motor driven, electronic, etc.	14	93,751 a/	3,903	b/ 84,065 a/	3,999
3353141182	All other general-purpose and special-purpose relays, n.e.c.	18	(X)	125,473	(X) a/	144,968
3353141185	Parts for general-purpose and special-purpose relays (sold separately)	6	(X)	14,106	(X)	12,647
3353143	Specific-purpose industrial controls	207	(X) a/	2,805,048	(X) a/	3,030,081
3353143301	U.S. Coast Guard, Navy, and Marine auxiliary controls and accessories	19	b/ 53,480 b/	93,204	c/ 58,757 b/	110,343
3353143104	Metal mill controls and accessories (all voltages)	6	(D)	(D)	(D)	(D)
3353143307	Crane and hoist controls, constant and adjustable voltage, including operators' desks and stations	16	124,225	157,078	138,161 r/	155,237
3353143311	Definite-purpose contactors and starters (600 volts and less)	18	(S)	63,425	(S) c/	84,604
	Machine tool applications (motion controllers):					
	Stand-alone controls for numerically controlled machine tools:					
3353143313	Computer numerical controls (CNC); postioning (point-to-point)	4	(S)	12,101	(S)	22,917
3353143316	Computer numerical controls (CNC); continuous path (contouring)	8	c/ 25,532 c/	239,631	b/ r/ 34,890 c/	304,035
3353143319	Robotic controls	2	(D)	(D)	(D)	(D)
3353143322	Other stand-alone motion controls	18	b/ 71,718 b/	66,252	c/ 90,442 b/ r/	81,261
3353143325	Subordinate motion controls	12	(S) c/	13,573	(S) c/ r/	13,254
3353143228	Programmable controllers, sold separately	50	(S) a/	963,862	(S) a/	993,165
3353143331	Other specific- or special-purpose ac and dc controllers, other definite-purpose devices	115	(X) a/	1,170,967	(X) a/	1,218,686
335314	General-purpose industrial controls and power circuit devices	223	(X) a/	3,642,417	(X) a/	3,762,830

Continued

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 2002 and 2001
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002 Quantity	2002 Value	2001 Quantity	2001 Value
	General-purpose controls:					
3353145101	Ac full voltage noncombination magnetic starters (1,000 volts or less	26	(S) a/	93,946	(S)	108,998
	Ac full voltage combination magnetic starters (1,000 volts or less):					
3353145104	Combination starters (less pumping pumping panels)	20 a/	120,883 a/	54,194	118,800	61,238
3353145107	Pumping panels	19 a/	51,195	44,622	54,454	43,073
3353145111	Disconnect switches (600 volts or less	24	2,337,023	52,161	1,943,325	55,118
	Ac full voltage manual controllers, 1,000 volts or or less:					
3353145113	Designed and rated to U.S. National Standards (NEMA) 9/	8	1,172,001	31,185	1,145,200	31,016
3353145116	Designed and rated to International Standards (IEC) 9/	6	(D)	(D)	(D)	(D)
	Ac contactors, 1,000 volts or less, excluding controls for packaged adjustable speed drives and synchronous motor controls:					
3353145119	Designed and rated to U.S. National Standards (NEMA)	13	385,323	50,579	444,844	60,509
3353145122	Designed and rated to International Standards (IEC)	15	(D)	(D)	(D)	(D)
3353145125	Ac reduced voltage controls, 1,000 volts or less, excluding synchronous motor starters	14 a/	51,623 b/	38,696 a/ r/	53,625 a/	38,593
3353145128	Synchronous motor starters, 1,000 volts or less, including both full and reduced voltage	3	(D)	(D)	(D)	(D)
3353145131	Motor control centers, 1,000 volts or less	35	(X)	480,236	(X) a/	535,573
3353145134	Starters and contactors for squirrel cage and and wound rotor and synchronous and nonsynchrous motors, over 1,000 to 7,200 volts, air break, vacuum, and oil immersed	6	(D)	(D)	(D)	(D)
3353145137	Brakes and clutches	18	(S) a/	76,098	(S) a/	67,016
3353145141	Digital readout systems, including dial or including dial or plugboard type	16	3,455	2,605 r/	3,929 r/	3,507
	Presence sensors and motion measurement devices:					
	Limit switches (positioning sensors):					
3353145143	Electromechanical positioning sensors	26	(X) a/	102,233	(X) a/	113,559
3353145146	Movement sensors	18	(X) a/	33,373	(X) a/	35,414
	Solid-state positioning sensors:					
3353145149	Nonoptical proximity sensors	17	(X) a/	72,468	(X) a/	75,223
3353145152	Optical proximity sensors	16	(X)	166,526	(X)	172,406
3353145155	All other pilot circuit devices, excluding relays and limit switches	12	(X) c/	5,782	(X) b/	6,500
3353145158	Dc power circuit devices (all voltages)	13	(X) c/	20,163	(X) c/	18,878
3353145161	Other control sensors (all voltages)	17	(X) a/	62,273	(X) a/	62,490
	Pushbuttons and pushbutton stations, excluding operators' desks and stations:					
3353145164	Pushbuttons, 18 mm and smaller	10	(X)	2,955	(X) r/	2,797
3353145167	Pushbuttons, 19 mm to 29 mm	20	(X)	49,801	(X)	55,926
3353145171	Pushbuttons, 30 mm and larger	26	(X)	148,742	(X)	167,266
3353145173	Rheostats and resistors (except for electronic applications) sold separately, n.e.c.	9	(X)	13,883	(X) a/	5,880
	Controls for adjustable speed drivers, including electronic and nonelectric and operators' desks and stations:					
3353145176	Controls for ac packaged drives	36	(S) a/	451,937	(S) a/ r/	485,232
3353145179	Controls for dc packaged drives	30 c/	80,054 c/	51,217 c/	90,629 b/ r/	53,260
3353145182	Ac drives systems	31 c/	47,344	216,825 c/ r/	83,584	251,573
3353145185	Dc drives systems	23 a/	451,443 b/	43,061	274,784 a/	44,974
3353145188	Solid-state motor controllers (all voltages)	38 a/	648,862 c/	206,137 c/ r/	713,950 b/ r/	207,568
3353145191	All other general industry devices and systems	79	(X) a/	999,224	(X) a/	1,019,141
3353147	Motor controller accessories and parts for industrial controls	101	(X) a/	440,486	(X) a/	515,620

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Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 2002 and 2001
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002 Quantity	2002 Value	2001 Quantity	2001 Value
3353147101	Motor controller accessories, including those items that are sold separately, but sold separately, but become part of a motor controller. Includes overload relays, auxiliary contacts, heater elements mechanical interlocks, control transformers, kits to add push buttons, selector switches, pilot lights, separate controller enclosure fittings, reset mechanisms, etc., excluding motor circuit switches sold, separately.....	37	(X)	199,397	(X)	215,504
3353147104	Parts for industrial controls.....	78	(X) a/	241,089	(X) a/	300,116

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. r/Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

1/Product codes 3353135101 and 3353135107 are combined to avoid disclosing data for individual companies.
2/Product codes 3353137101 and 3353137104 are combined to avoid disclosing data for individual companies.
3/Product codes 335313A328, 335313A331 and 335313A337 are combined to avoid disclosing data for individual companies.
4/Product codes 3353141104, 3353141107 and 3353141111 are combined to avoid disclosing data for individual companies.
5/Product codes 3353141116 and 3353141119 are combined to avoid disclosing data for individual companies.
6/Includes products codes 3353141122, 3353141125, 3353141128, 3353141131, 3353141134, and 3353141137.
7/Includes product codes 3353141146, 3353141149, and 3353141152 to avoid disclosing data for individual companies.
8/Includes product codes 3353141158, 3353141161, and 3353141164 to avoid disclosing data for individual companies.
9/Product codes 3353145113 and 3353145116 are combined to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

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Table 3. Shipments, Exports, Imports, and Apparent Consumption of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 2002

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/
3353131101, 03	Power circuit breakers	582,058	168,511	163,891
3353131129	Parts for power circuit breakers	23,265	-	113,386
3353133104, 201, 207, 211, 213	Low voltage panelboards and distribution boards	(D)	110,664	365,289
3353133216, 19	Knife switches	200,794	11,592	13,780
3353133228, 34	Grouped metering panels, including accessory components and other low voltage switchgear apparatus	317,592	57,320	70,135
3353135101, 04, 07, 11	Fuses and fuse equipment, under 2,300 volts	363,672	168,627	99,103
3353137101, 04, 07, 11, 13, 17, 31	Molded case circuit breakers, 1,000 volts and under	1,247,807	161,338	368,611
3353139100	Duct, including plug-in units and accessories	218,390	19,584	3,110
335313A101, 204, 307, 311, 313, 316, 319, 334, 337	Switchgear and switchgear assemblies 3/	(D)	29,659	13,056
335313A322	Power fuses and fuse links, 2,300 volts and over 3/	(D)	11,010	6,465
335313A325, 28, 31	Power and ground connectors and transmission and distribution connectors 3/	1,875,361	145,537	55,540
3353141101, 04, 07, 11, 13, 16, 19, 22, 25, 28, 31, 34, 37, 41, 43, 46, 49, 52, 55, 58, 61, 64, 67, 71, 73, 76, 79, 82	Relays	577,576	425,611	672,632
3353143313, 16	Controls for numerically controlled machine tools	251,732	35,577	27,356
3353143228	Programmable controllers	963,862	176,643	401,165
3353145101, 04, 07, 28	Motor starters	(D)	65,134	53,856
3353145131	Motor control centers, 1,000 volts or less	480,236	147,170	49,145
3353145137	Brakes and clutches	76,098	28,325	94,677
3353145143, 46	Limit switches	135,606	-	-
3353145173	Rheostats and resistors	13,883	16,844	13,449

- Represents zero. D Withheld to avoid disclosing data for individual companies.

1/Source: Census Bureau report EM 545, U.S. Exports.

2/Source: Census Bureau report IM 145, U.S. Imports for Consumption.

3/Data for "Switchgear and switchgear assemblies" and "Power fuses and fuse links" are combined with "Power and ground connectors" and "Transmission and distribution connectors" to avoid disclosing data for individual companies.

Table 4. Comparison North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2002

Product code	Product description	Export code 1/	Import code 2/
3353131101, 03	Power circuit breakers	8535.21.0000 8535.29.0020 8535.29.0040 8536.20.0040	8535.21.0000 8535.29.0020 8535.29.0040 8536.20.0040
3353131129	Parts for power circuit breakers	8538.90.8020	8538.90.8020
3353133104, 201, 207, 211, 213	Low voltage panelboards and distribution boards	8537.10.9050	8537.10.9050
3353133216, 19	Knife switches	8536.50.9045	8536.50.9045
3353133228, 34	Grouped metering panels, including accessory components and other low voltage switchgear appararus	8537.10.9020	8537.10.9020
3353135101, 04, 07, 11	Fuses and fuse equipment, under 2,300 volts	8535.10.0040 8536.10.0020 8536.10.0040	8535.10.0040 8536.10.0020 8536.10.0040
3353137101, 04, 07, 11, 13, 17, 31	Molded case circuit breakers, 1,000 volts and under	8536.20.0020	8536.20.0020
3353139100	Duct, including plug-in units and accessories	8536.90.8010	8536.90.8010
335313A101, 204, 307, 311, 313, 316, 319, 334, 337	Switchgear and switchgear assemblies	8537.20.0020	8537.20.0020
335313A322	Power fuses and fuse links, 2,300 volts and over	8535.10.0020	8535.10.0020
335313A325, 28, 31	Power and ground connectors and transmission and distribution connectors	8535.90.8040	8535.90.8040
3353141101, 04, 07, 11, 13, 16, 19, 22, 25, 28, 31, 34, 37, 41, 43, 46, 49, 52, 55, 58, 61, 64, 67, 71, 73, 76, 79, 82	Relays	8536.41.0005 8536.41.0020 8536.41.0030 8536.41.0045 8536.41.0050 8536.41.0060 8536.49.0050 8536.49.0055 8536.49.0065 8536.49.0075 8536.49.0080	8536.41.0005 8536.41.0020 8536.41.0030 8536.41.0045 8536.41.0050 8536.41.0060 8536.49.0050 8536.49.0055 8536.49.0065 8536.49.0075 8536.49.0080
3353143313, 16	Controls for numerically controlled machine tools	8537.10.9030	8537.10.9030
3353143228	Programmable controllers	8537.10.9060	8537.10.9060
3353145101, 04, 07, 28	Motor starters	8536.50.4000	8536.50.4000
3353145131	Motor control centers, 1,000 volts or less	8537.10.6000	8537.10.6000
3353145137	Brakes and clutches	8505.20.0000	8505.20.0000
3353145143, 46	Limit switches	8536.50.8055	8536.50.8055
3353145173	Rheostats and resistors	8533.40.0040 8533.40.8040	8533.40.8040

1/Source: 2002 edition, Harmonized System-based Schdeule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2002).

Appendix.
General CIR Survey Information, Explanation of General Terms and Historical Note

GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

21 Mining
22 Utilities
23 Construction
31-33 Manufacturing
42 Wholesale Trade
44-45 Retail Trade
48-49 Transportation and Warehousing
51 Information
52 Finance and Insurance
53 Real Estate and Rental and Leasing
54 Professional, Scientific, and Technical Services
55 Management of Companies and Enterprises
56 Administrative and Support and Waste Management and Remediation Services
61 Educational Services
62 Health Care and Social Assistance
71 Arts, Entertainment, and Recreation
72 Accommodation and Foodservices
81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5percent from previously published data are indicated by footnotes.

DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

EXPLANATION OF GENERAL TERMS

Capacity. The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

Consumption. Materials used in producing or processing a product or otherwise removing the product from the inventory.

Exports. Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

Gross shipments. The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

Interplant transfers. Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

Inventories. The quantity or value of finished goods, work in progress, and materials on hand.

Machinery in place. The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

Net receipts. Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

Production. The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

Quantities produced and consumed. Quantities of each type of product produced by a company for internal consumption within that same company.

Quantity and value of new orders. The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

Quantity and value of shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Stocks. Total quantity of ending finished inventory.

Unfilled orders (backlog). Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

HISTORICAL NOTE

Data on switchgear, switchboard apparatus, relays, and industrial controls have been collected by the Census Bureau since 1971. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.